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UNIVERSAL DOCUMENTATION SYSTEM

INTERNATIONAL SPACE STATION ORBITAL VOL-II

PRD/PSP/OR/OD

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CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 1000 - ADMINISTRATIVE

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      571956      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      05/22/03
                                   INITIAL DATE:      05/22/03
ITEM NUMBER:                H1          DATE LAST CHANGED:  05/30/03
SECTION:                    1000        TIME LAST CHANGED:  08:17:14

REQUESTER:                  MSFC
TEST CODE:
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1. DESCRIPTION: PRD/PSP OVERVIEW

The Program Introduction (PI) and the Statement of Capability (SC) are UDS Level 1 documents and are used to initiate program support planning between users and support agencies.

The Program Requirements Document (PRD) and Program Support Plan (PSP) are UDS Level 2 documents and are used to provide additional, or more detailed, program information with specific application to the more complex programs.

The PRD is prepared by an organization to describe the detailed technical and administrative requirements for support desired from support organizations. The PRD will document specific support requirements, but not procedures or implementation actions.

The PSP is a response and commitment document to operational support requirements presented in the PRD. These documents are provided by support organizations for all PRDs, to commit resources, identify items that can not be supported, or request additional information, justification, funding coordination, etc.

ISSP Orbital Databases

The ISSP orbital database for the Space Station core systems is managed by Johnson Space Center (JSC), and the ISSP orbital database for Space Station payloads is managed by the Marshall Space Flight Center (MSFC). These databases contain ISSP operational support requirements levied on an organization, agency, or DoD for support to the ISSP during the assembly and operational phases.

- a. Volume I: ISS Core systems
- b. Volume II: ISS Payloads

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[PRD] DATABASE RECORD:      571957      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      05/22/03
                                     INITIAL DATE:      05/22/03
ITEM NUMBER:                H2          DATE LAST CHANGED:  05/30/03
SECTION:                    1000       TIME LAST CHANGED:  08:23:58

REQUESTER:                  MSFC
TEST CODE:
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1. DESCRIPTION: REQUIREMENTS MANAGEMENT

ROLES AND RESPONSIBILITIES

Database Managers (DBMs): DBMs are assigned to each database, and have the primary responsibility for ensuring the overall quality of databases and for the format and consistency of data entries. They are responsible to users of databases for ensuring good flow, readability, timely updates, consistency, and appropriate reviews of the documents to purge and correct old entries. The DBMs may function as the R&R Managers and may have dual responsibility for SSP and ISSP PRD/PSP databases.

Requirements and Response (R&R) Managers: R&R Managers are responsible for the quality and accuracy of the support requirements and support responses contained in the SRS databases. These individuals are directly responsible for developing, verifying, obtaining official approval, and submitting requirements against other centers or agencies,

evaluating impact of requirements submitted against their individual organizations, and developing and validating appropriate responses. The R&R Managers are also responsible for the accuracy of the technical statements, status of funding, periodic review of existing requirements and responses for continued applicability, and responding to all the questions regarding their requirements and responses. The R&R Managers who are responsible for documenting the requirements must ensure support requirements are funded, within the scope of their MOUs, and in accordance with applicable cost recovery policies.

FUNCTIONAL OPERATIONS AND INTERFACES

Database Managers (DBM)

The DBMs have overall responsibility of the PRDs/PSPs regarding all

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requirements inputs and responses to ensure continuity and accuracy of the databases and preserve the integrity of the database as a whole. The DBM may challenge any requirement or response provided by the R&R Manager, and, in some cases, reject requirements deemed inappropriate for a particular database. The DBMs will work closely with the R&R Managers to resolve problems with requirements entries and responses. The DBMs shall ensure, through proper coordination, that conflicting requirements do not reside in the PRDs. Following ISSP payloads deployment and completion of Space Shuttle support, mission support requirements for the ISSP orbital phase will be included in appropriate documents. For ISSP systems and payloads, the continuing requirements for on-orbit support shall be documented in the ISS Orbital PRD/PSP Volume I managed by the JSC DBM and Volume II managed by the MSFC DBM.

Requirements and Response (R&R) Managers

The R&R Managers are concerned with the quality and accuracy of the organization's entries that make up the databases and shall be the single point contact for the submittal of requirements or responses for their respective organization, center, or agency. The R&R Managers shall work very closely with one another in developing the requirements statements, obtaining official responses, and ensuring that funding is available with the appropriate Program Requirements Manager (PRM) to new or changed requirements.

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		INITIAL DATE:	05/22/03
ITEM NUMBER:	H3	DATE LAST CHANGED:	05/30/03
SECTION:	1000	TIME LAST CHANGED:	08:40:46
REQUESTER:	MSFC		
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1. DESCRIPTION: REQUIREMENT PROCESSING

Organizations or entities within a center requesting operational support will convey their requests to their center's R&R Manager. The

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requesting R&R Manager has the responsibility of coordinating with the supporting R&R Manager(s) and the appropriate PRM for validation, approval, and funding of the requirement. The validation, approval, and funding processes are defined by each Program, and may differ depending on the type and scope of the requirements (Shuttle core, Shuttle payloads, Station core, Station payloads, launch versus orbit support, etc.). In any case, the requirements must be validated, approved and funded (if necessary) by the Program Office, or its delegate, prior to implementation. The PRM is responsible for coordinating requirements with the Center Customer Commitment Manager (CCCM) as required by processes developed jointly between the Programs and Space Communications and Data Systems (SCDS). The R&R Managers will coordinate internal to their center, via documented internal processes, any issues regarding funding, approval, or implementation. The appropriate DBM will enter the requirement request into the ASRS database and forward it to all supporting centers or agencies for response. Typically, requirement requests, responses, approval issues, or funding issues are coordinated and negotiated with all involved parties (either informally or through documented processes such as payload integration) prior to the formal PRD documentation process. This leads to a more efficient SRS process and significantly reduces bureaucracy and requirement processing/implementation time.

Requirements that require inter-center communications support will be coordinated through the NISN representative designated by NISN for each Program. The coordination process varies depending on Program and mission phase. The requests for funding or implementation information to support inter-center operational communication requests will be through the NISN Center Representative or its delegate. Once communications requirements are approved and funded by the Program (via the Program's approval process), the requirements will be processed through the SRS PRD, where the delegated R&R Manager has the responsibility for interfacing with the appropriate NISN representative for implementing the requirement.

New or changed requirements should be entered into ASRS databases as Routine Support Requirements (RSRs). Within T-30 days prior to the start of a specific test or operation, support requirements are entered as Expedite Support Requirements (ESRs) to ensure more rapid processing

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and response. At T-72 hours prior to start of tests or operations, real-time support requirements may be levied using existing scheduling systems, briefing messages, or network advisories. If the requirements are to be permanent, they will be entered into the ASRS Database as being continuing official requirements.

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		INITIAL DATE:	05/22/03
ITEM NUMBER:	H4	DATE LAST CHANGED:	05/30/03
SECTION:	1000	TIME LAST CHANGED:	08:42:48
REQUESTER:	MSFC		
TEST CODE:			

1. DESCRIPTION: REQUIREMENTS FUNDING

Operations support requirements documented in the PRD must be funded prior to support implementation. The responsibility for support requirements funding may vary based on the type of requirement, scope of support, agency/organization requesting or providing support, and other factors. The supporting organization or agency is responsible for verifying that funds are available prior to implementing support. If funding has not been made available, or additional funding is required, the requester is responsible for coordination and validation of funds for support requirements.

Normally, when the original program documents are developed, support costs are assessed and funds are budgeted to cover the cost of the support requested. The subsequent requirements are assessed by the provider through the R&R Manager for support impact. Prior to "WILCO" support commitment responses, the provider, through the R&R Manager, will verify that the support is within the scope of existing capabilities, or that funds have been committed or obligated, or that additional funds are required to cover any increase costs.

Prime requesters, as well as the providers, will coordinate with appropriate Program management and financial resource personnel to ensure funding is approved and available. The prime R&R Manager must be aware that new requirements, or changes to existing requirements,

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[PRD] DATABASE RECORD: 571959
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may require additional funding. Therefore, the approval levels within the organizations must be appropriate so that supporting organizations may avoid expending resources researching costs, etc. for requirements that will not be funded and, therefore, cannot be supported. The R&R Manager may submit requirements into the ASRS where funding has not been resolved; however, a statement must be provided to the effect that funding is not resolved and is being worked.

[PRD] DATABASE RECORD:	571977	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	05/23/03
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ITEM NUMBER:	H5	DATE LAST CHANGED:	05/30/03
SECTION:	1000	TIME LAST CHANGED:	08:50:07
REQUESTER:	MSFC		
TEST CODE:			

1. DESCRIPTION: DBR FIELD DEFINITIONS

Each page in a PRD consists of four sections. The first part of the page is the Page Header. The second part is the TEXT/REQUIREMENTS (PRD/OR) portion that describes the requirement. The third part of the page is the PSP/OD section that contains the responses to the requirement. The fourth part of the page is the Page Footer. Only the PRD section will be discussed here.

DATABASE RECORD - A unique number generated automatically by the ASRS at the time the requirement is entered into the database.

DOCUMENT ID - This contains the document ID in the ASRS database for this particular PRD

ITEM NUMBER - A letter(s), number, letter(s) sequence that identifies the requesting agency(s), the section sequence number, and the supplier agency(s). Formatted as shown: "XnY"

X would be the letter designator for the requirement requestor(s)
n would be the sequence number within that section
Y would be the letter designator for the requirement supplier(s). This field is not used if the DBR is there for informational purposes only,

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[PRD] DATABASE RECORD: 571977
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such as this DBR.
Refer to Section 1052 for the list of Agency Designators.

SECTION NUMBER - A number that identifies under which grouping type the requirement would be classified as. Refer to Section 1031 for an index of section numbers and titles used within this PRD.

TEST CODE - These are used as a method of correlating requirements to the test or mission activity involved. Refer to Section 1051 for a list of Test Codes used within this PRD.

REQUIREMENT STATUS - Shows the official state of each DBR. There are five codes which are used. They are:

DRAFT - Written for review and changes by other centers

NEW - Requirement has been released but can not be approved because of funding issues or other management actions.

APPROVED - Requirement is considered to be official and binding.
Suppliers need to provide commitment responses.

MODIFIED - Requirement is being modified by the requestor. No supplier action is to be taken.

DELETED - Requirement has been deleted by the requestor. Suppliers are released from their support commitments.

APPROVAL DATE - When the approved requirement or change to the approved requirement was entered into the ASRS database.

INITIAL DATE - When the requirement was originally entered in the ASRS database.

DATE LAST CHANGED & TIME LAST CHANGED - Reflects the last date/time that any kind of change was made to this DBR.

[PRD] DATABASE RECORD:	555020	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	03/03/03
		INITIAL DATE:	04/26/00
ITEM NUMBER:	H7	DATE LAST CHANGED:	05/02/05

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[PRD] DATABASE RECORD: 555020
ITEM NUMBER: H7

SECTION: 1000 TIME LAST CHANGED: 13:03:01

REQUESTER: MSFC
TEST CODE: INFO

1. DESCRIPTION: GLOSSARY

COMMITTED INFORMATION RATE (CIR):

The amount of network bandwidth guaranteed by NISN to be available for a particular WAN service.

CRITICAL:

An availability category used by any ground support function required to assure crew safety or survival of the ISS. Services classified as critical require immediate restoration in the event of a failure.

INCREMENT:

During ISS assembly phase, the time period between the launch of a particular crew until the undocking from the ISS of the return vehicle for that crew.

NON-CRITICAL HIGHLY DESIRABLE:

Restoration of Non-critical Highly Desirable services may be accomplished within 2 hours without creating a hazardous condition to the ISS or the United States Ground Segment (USGS).

NON-CRITICAL ROUTINE:

Restoration of Routine services may be made within 24 hours without creating a hazardous condition to the ISS or USGS.

PAYLOAD FLIGHT ANCILLARY DATA:

Ancillary data is a selected subset of core systems data and other on-board generated data (including payload generated data) required by users to supplement data for payloads data analysis. This data is

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necessary for executing real-time operations and for analysis of payloads by ground controllers as required. It contains state vectors, spacecraft attitude data, etc. Ancillary data describes the flight environment in which the payload is operated.

PAYLOAD HEALTH & STATUS:

Payload H&S data consists of sensor data of payloads and equipment in the experiment racks and status data of payloads and racks output by the control equipment. This data does not include science data. Payload H&S data is a subset of payload data required by the Payload Operations Integration Center (POIC) to monitor payload conditions onboard the station. It will be rack level and payload level data and can include elements of ancillary and safety data. This data is downlinked via S-Band.

PAYLOAD SYSTEMS DATA:

Health and Status information from the experiment equipment is a subset of Payload System data. Payload Systems data includes normal hardware and software configurations and status telemetry. Payload systems data includes that data pertaining to payload support systems that will allow the ground to monitor these systems. This data is downlinked via Ku-Band.

PERFORMANCE CATEGORIES:

Definitions may be found in the NISN Services Document (NSD). A summary of NISN IP Services may be found in DBR 582197, Section 1070 of this document.

1. STANDARD SERVICE
2. PREMIUM SERVICE
3. MISSION CRITICAL SERVICE
4. REAL-TIME CRITICAL SERVICE

REAL-TIME (RT) PAYLOAD DATA:

This is actual experiment data from the payloads, and is also referred

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[PRD] DATABASE RECORD: 555020
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to as Science data. This data is downlinked via Ku-Band.

VOICE OVER INTERNET PROTOCOL:

Voice over Internet Protocol (VoIP) is a means of providing for an extension of Mission Voice loops to desktop workstations via common IP based networks. Packets can be encrypted for security.

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SECTION 1031 - INDEX

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1000	ADMINISTRATIVE
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1100	PROGRAM DESCRIPTION
2000	TEST REQUIREMENTS/SUPPORT PLANS
2200	TELEMETRY DATA
2700	COMMUNICATION
2730	VOICE NETWORK TRANSMISSION
2734	VIDEO/DATA NETWORK TRANSMISSION
2750	VOICE TERMINATIONS
2780	OTHER COMMUNICATIONS
2800	VIDEO
3073	REAL TIME DATA DISTRIBUTION

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SECTION 1050 - ABBREVIATIONS/ACRONYMS

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:	545762	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	03/04/03
		INITIAL DATE:	04/26/00
ITEM NUMBER:	H1	DATE LAST CHANGED:	06/16/04
SECTION:	1050	TIME LAST CHANGED:	14:18:42
REQUESTER:	MSFC		
TEST CODE:	INFO		

1. DESCRIPTION: ACRONYMS AND ABBREVIATIONS

ACS	Assembly Contingency Subsystem
AIS	Automated Information System
ARC	Ames Research Center
ASI	Agenzia Spaziale Italiana
bps	bits per second
CCSDS	Consultative Committee for Space Data Systems
CIR	Committed Information Rate
COR	Communications Outage Recorder
CSA	Canadian Space Agency
DBR	Database Record
DOD	Department of Defense
DSMC	Data Services Management Center
ESA	European Space Agency
ESTEC	European Space Technology Center
ESTL	Electronics Systems Test Laboratory
EVA	Extravehicular Activity
EVODS	Enhanced Voice Distribution System
FLT	Flight
GN	Ground Network
GRC	Glenn Research Center
GRGT	Guam Remote Ground Terminal
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
HOSC	Huntsville Operations Support Center
I	Increment
ICD	Interface Control Document
IDD	Interface Definition Document
IGSS	International Ground System Specifications
INC	Increment
IOS	Instructor Operator Station
IP	Internet Protocol
IP	International Partner
IPS	Integrated Planning System

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IS	Instructor Station
ISS	International Space Station
IT	Information Technology
IVoDS	Internet Voice Distribution System
JAXA	Japan Aerospace Exploration Agency
JSC	Johnson Space Center
Kbps	Kilobits per second
KSA	Ku-band Single Access
KSAF	Ku-band Single Access Forward
KSAR	Ku-band Single Access Return
KSC	Kennedy Space Center
LOR	Line Outage Recorder
Mbps	Megabits per second
MCC-H	Mission Control Center - Houston
MCC-M	Mission Control Center - Moscow
MDM	Multiplexer Demultiplexer
MMT	Mission Management Team
MPEG	Moving Pictures Expert Group
ms	milliseconds
MSFC	Marshall Space Flight Center
NASA	National Aeronautics and Space Administration
NCHD	Non-Critical Highly Desirable
NISN	NASA Integrated Services Network
NMI	NASA Management Instruction
NPG	NASA Procedures and Guidelines
NPRD	Network Program Requirements Document
NTSC	National Television Standards Committee
OCA	Orbiter Communications Adapter
OCMS	Operations Control Mission Software
OND	Operational Need Date
OSF	Office of Space Flight
PB	Playback
PDSS	Payload Data Services System
PDL	Payload Data Library
PEI	Payload Engineering and Integration
PID	Program Introduction Document
PIMS	Payload Information Management System
PN	Pseudorandom Noise
POIC	Payload Operations Integration Center

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POP	Point of Presence
PPS	Payload Planning System
PRD	Program Requirements Document
PSP	Program Support Plan
PTC	Payload Training Capability
RAPS	Remote Area for Payload Support
RPI	Remote Principal Investigator
RSA	Russian Space Agency
RT	Real-time
SER	Scientific Engineering and Research
SGS	Space to Ground System
SN	Space Network
SNMP	Simple Network Management Protocol
SSA	S-band Single Access
SSAF	S-band Single Access Forward
SSAR	S-band Single Access Return
SSCC	Space Station Control Center
SSP	Space Station Program
SSPF	Space Station Processing Facility
SSTF	Space Station Training Facility
STDN	Space Tracking and Data Network
STS	Space Transportation System
TBD	To Be Determined
TBS	To Be Supplied
TCP	Transmission Control Protocol
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System
TSC	Telescience Support Center
UDP	User Datagram Protocol
UDS	Universal Documentation System
UF	Utilization Flight
UPD	User Performance Data
USGS	United States Ground Segment
USOC	United States Operations Center
USOS	United States On-Orbit Segment
VoIP	Voice over Internet Protocol
WAN	Wide Area Network
WSC	White Sands Complex
ZOE	Zone of Exclusion

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SECTION 1051 - TEST CODE DEFINITION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      555013      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      01/23/04
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1          DATE LAST CHANGED:  01/23/04
SECTION:                    1051       TIME LAST CHANGED:  13:31:14

REQUESTER:                  MSFC
TEST CODE:                  INFO
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1. DESCRIPTION: TEST CODE DEFINITION

Test Codes

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ARCTALL      ARC TSC, all phases
ASIALL       ASI, all phases
CSAALL       CSA, all phases
ESAALL       ESA, all phases
ETOVOPS      ISS Payloads being transported to and from Earth and ISS
FULL-TIME    Full period configuration required
GRCTALL      GRC TSC, all phases
INCxx        Increment Numbers (Indicates the valid support increments)
ISSPALL      ISS Payloads, all Increments, all Flights
JAXAALL      JAXA, all phases
JSCTALL      JSC TSC, all phases
POICALL      POIC, all phases
POICOPS      POIC Real-Time Mission Operations
POICSIM      POIC Simulations
POICTEST     POIC Testing, excluding Simulations
RPIALL       RPI sites
RSAALL       RSA, all phases
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SECTION 1052 - SPECIAL CODE DEFINITION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      545765      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      03/03/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1          DATE LAST CHANGED:  12/03/03
SECTION:                    1052        TIME LAST CHANGED:  09:44:31

REQUESTER:                  MSFC
TEST CODE:                  INFO
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1. DESCRIPTION: AGENCY DESIGNATORS

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WSMR      A - White Sands Missile Range
GRC        B - Glenn Research Center
ER         E - 45 SPW (Space Wing) Formerly ESMC
GSFC       G - Goddard Space Flight Center
MSFC       H - Marshall Space Flight Center
LaRC       I - Langley Research Center
KSC        K - Kennedy Space Center
ARC        M - Ames Research Center
WFF        Q - Wallops Flight Facility
AFSCN      S - Air Force Satellite Control Network
JSC        T - Johnson Space Center
DFRC       X - Dryden Flight Research Center
NASA       Y - National Aeronautics and Space Administration (NASA)
              Headquarters
WSTF       Z - JSC White Sands Test Facility
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Subrequester Codes

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ARCT      ARC TSC
ASI       Italian Space Agency
CSA       Canadian Space Agency
ESA       European Space Agency
GRCT      GRC TSC
GSFC      Goddard Space Flight Center
HOSC      Huntsville Operations Support Center
IST       Integrated Support Team
JAXA      Japan Aerospace Exploration Agency
JSC       Johnson Space Center
JSCT      JSC TSC
KSC       Kennedy Space Center
MSFCT     MSFC TSC
PSIV      Payload Software Integration Verification (at MSFC)
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CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
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PROGRAM NUMBER: 30000

SECTION 1052 - SPECIAL CODE DEFINITION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

CONTINUED

[PRD] DATABASE RECORD: 545765
ITEM NUMBER: H1

RPO	Research Program Office
RSA	Russian Space Agency
SSCC	Space Station Control Center
SSTF	Space Station Training Facility
USOC	United States Operations Center
WSC	White Sands Complex

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

Document Number	Title
530-ICD-NCCDS/MOC	GSFC NCC to Mission Operations Centers ICD
534-OIP-NCC/MSFC-HOSC	Operations Interface Procedures between the GSFC NCC and the MSFC HOSC
NPG 2810.1	NASA Procedures and Guidelines Security of Information Technology
SSP 41154	USOS to USGS Command and Telemetry ICD
SSP 41158	USOS to IGSS Ku-Band Telemetry Format ICD
SSP 45001	JSC SSCC to MSFC HOSC ICD
SSP 45025	HOSC to JAXA ICD
SSP 45026	HOSC to ESA ICD
SSP 50088	JSC SSTF to MSFC POIC and Remote Area for Payload Support (RAPS) ICD
SSP 50304	POIC Capabilities Document
SSP 50305	POIC to Generic User IDD
SSP 50365	HOSC to JSC TSC ICD
SSP 50366	HOSC to GRC TSC ICD
SSP 50367	HOSC to ARC TSC ICD
SSP 50368	HOSC to MCC-M ICD

ISP1070.001 PAGE SEQUENCE NUMBER: 19 REF UDS R 112
CLASSIFICATION UNCLASSIFIED

CLASSIFICATION UNCLASSIFIED

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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 1070 - TECHNICAL REFERENCES

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

CONTINUED

[PRD] DATABASE RECORD: 582197
ITEM NUMBER: H2

1. DESCRIPTION: NISN ROUTED DATA SERVICES

Agency policy dictates the use of Internet Protocol (IP) as the standard protocol for data networking.

A tail circuit will be necessary to provide access to a location remote from one of the NASA centers or NISN Hubs. This access may limit the IP service to a reduced level, based on local providers capabilities.

(1) Standard Routed Data Service:

Standard IP service is the commodity Internet service that provides the Agency's link to the Internet in general. It provides basic universal Internet connectivity with minimal performance guarantees or restrictions on acceptable use. Standard IP service is open to the public to access publicly available NASA information sources.

The Standard data service offers an availability of 99.5% or greater with a restoral time not to exceed 24 hours during the normal work week (6:00 AM Eastern to 6:00 PM Pacific).

The packet loss shall not exceed 1%.

(2) Premium Routed Data Service

Premium IP service is differentiated from standard IP service in that it provides a higher performance level, higher priority for problem resolution, and is not directly connected to the general Internet. Premium IP connectivity to the general Internet is through a controlled gateway and is implemented on an exception basis only. Premium IP service is most appropriate for Agency networking requirements where the operations should be isolated from the general Internet.

The Premium data service offers an availability of 99.5% or greater with a restoral time not to exceed 4 hours on a 24x7 basis.

The maximum packet loss shall be less than 1%.

(3) Mission Critical Routed Data Service

Mission Critical IP service is differentiated from Premium IP service in that it is engineered as a very closed system to support spaceflight mission critical telemetry and data flows that require an extremely

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SECTION 1070 - TECHNICAL REFERENCES

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 582197
ITEM NUMBER: H2

high level of availability for mission success. All systems and facilities connected to the Mission Critical IP service must meet the specified Information Technology security level. Access to and from other NASA IP services is extremely limited and on a strict exception basis only.

The Mission Critical data service offers an availability of 99.95% or greater with a restoral time not to exceed 2 hours on a 24x7 basis. The maximum packet loss shall not exceed .001%.

(4) Real-Time Critical Routed Data Service

This service provides a mission critical level of data networking connectivity with emphasis on meeting real-time telemetry transport requirements through the use of the Internet Protocol suite (IP).

Real-Time Critical IP service is primarily differentiated from Mission Critical IP service in that it is engineered with a high level of redundancy to achieve the added level of availability. This service employs the same security and connectivity features and limitations as the Mission Critical service.

The Real-Time Critical data service offers an availability of 99.98% or greater with a restoral time of less than 1 minute on a 24x7 basis. The maximum packet loss shall not exceed .001%.

CLASSIFICATION UNCLASSIFIED

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PROGRAM NUMBER: 30000

SECTION 1100 - PROGRAM DESCRIPTION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      545766      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      03/04/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1          DATE LAST CHANGED:  06/17/04
SECTION:                    1100       TIME LAST CHANGED:  08:23:54

REQUESTER:                  MSFC
TEST CODE:                  INFO
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1. DESCRIPTION:

OPERATION CONCEPTS - GENERAL

The ISS on-orbit operations consists of the spacecraft system related activities and the user experiment related activities.

Spacecraft systems support, mission planning, and integration related activities will be performed by the ISS ground operations support at NASA field centers and the International Partners (IP) facilities. Efficient communication among ground facilities is vital to mission success. The Program will require operational and administrative links as appropriate for facilities and functions including those outlined below:

- Space Station Control Center (SSCC): The SSCC is the ISS portion of the Mission Control Center-Houston (MCC-H) located at the Johnson Space Center (JSC). It will be host to Mission Management Team (MMT) and the overall ISS Flight Director, and it will provide functionally for overall planning and command control of vehicle operations and flight safety, integrated across all IP elements. The SSCC will also function as the facility for the U.S. Flight control team to perform more detailed command and control of the U.S. elements, including planning, maintenance, etc. The SSCC will require communications services to support these operations responsibilities. Real-time systems operations data will flow between the SSCC and the ISS. Vehicle systems data, planning data, voice, and video will flow between JSC and various U.S. and IP locations.

- Mission Control Center-Moscow (MCC-M): The MCC-M, at Kaliningrad, Russia, under the oversight of the MMT and in coordination with SSCC, is responsible for the launch, rendezvous, docking, and on-orbit operation of Russian elements and vehicles. The MCC-M is responsible for control of selected core systems functions elsewhere in the ISS, both in nominal and SSCC back-up scenarios. These functions will primarily use the Russian communications and tracking (C&T) resources,

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SECTION 1100 - PROGRAM DESCRIPTION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 545766
ITEM NUMBER: H1

but may also be performed via the interface to the SSCC and its space-to-ground communications systems. Interfaces are required between the SSCC and the MCC-M for data, voice, and video.

- Huntsville Operation Support Center (HOSC): The HOSC, located at the Marshall Space Flight Center (MSFC), provides the operational environment for all MSFC-supported space programs. It incorporates all systems required to perform data acquisition and distribution, telemetry processing, command services, database services, mission support services, and system monitoring and control. The Payload Operations and Integration Center (POIC), located in the HOSC, will require communications services to support all utilization and assembly phase flights. The POIC will exchange real-time and near real-time data with geographically distributed user facilities in the U.S. and at IP locations. Payload commands and other data will be routed from the user facilities to the POIC for integration into the forward link command stream at the SSCC. The Payload Data Services System (PDSS), located in the HOSC is responsible for payload data processing and distribution. The PDSS will require communications services to receive ISS telemetry data and distribute payload data to user facilities in the U.S. and at IP locations. Communications services contained in this document for the POIC, PDSS, Remote Area for Payload Support (RAPS), and other MSFC operational facilities are routed through the HOSC.

- Telescience Support Center (TSC): The TSC is a NASA funded facility which provides the capability to plan and operate on-orbit facility class payloads and experiments, other payloads and experiments, and instruments.

- International Partners (IP) Facilities: The IP facilities are responsible for the coordinated command and control of IP systems and payloads. Data relating to IP ISS systems and experiments will be transferred to and from CSA, ESA, and JAXA. The IP's will provide communications services from a designated termination point to their facilities.

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SECTION 2000 - TEST REQUIREMENTS/SUPPORT PLANS

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:	554951	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	03/04/03
		INITIAL DATE:	04/26/00
ITEM NUMBER:	H1G	DATE LAST CHANGED:	06/17/04
SECTION:	2000	TIME LAST CHANGED:	08:26:00
REQUESTER:	MSFC		
TEST CODE:	ISSPAL	POICALL	

1. DESCRIPTION: TRACKING AND DATA RELAY SATELLITE SYSTEM

The Tracking and Data Relay Satellite System (TDRSS) shall support International Space Station (ISS) Payload Utilization with S-Band and Ku-Band communications services.

The ISS to Ground through TDRSS Interface Control Document (ICD), SSP 42018, identifies detailed technical interface and link performance requirements and specifications.

Coverage during ZOE transit via the Guam Remote Ground Terminal (GRGT) is required for all ISS S-Band services. ISS Ku-Band services are not required from GRGT during ZOE.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/04/03

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      545767      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      02/20/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1G      DATE LAST CHANGED:  06/21/04
SECTION:                    2200      TIME LAST CHANGED:  08:38:52

REQUESTER:                  MSFC
TEST CODE:                  ISSPAL      POICALL
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1. DESCRIPTION: KU-BAND RETURN SERVICE FROM WSC TO THE HOSC

The Ku-Band Single Access Return (KSAR) link operates at a data rate of 50 Mbps. In the future, the KSAR link will be upgraded to 150 Mbps. The requirements for Ku-band return data to the HOSC are as follows:

- a. NISN shall provide a fiber terrestrial communication network for the distribution of ISS Ku-Band downlink data. This network shall support variable data rates from 25 Mbps to 150 Mbps.
- b. The input to the network shall be IP packets, and the output to the MSFC is required to be in the same format as that provided to the network.
- c. NISN shall provide a 56 Kbps out-of-band frame relay cloud for network management and status reporting.
- d. The total service availability of the network shall not be less than 0.9995 percent.
- e. The maximum downtime shall not exceed 2 hours for any single outage.
- f. A NISN Mission Critical Service is required.
- g. The maximum acceptable packet loss is .001 percent.
- h. The one way data transport delay shall not exceed 100 ms.
- i. A Mission Critical Systems/MSN security level interface is required.
- j. Reference MSFC-PLAN-3340, IDEA Development Plan, for more detailed requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/21/04

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[PRD] DATABASE RECORD:      551180      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      02/20/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H2G      DATE LAST CHANGED:  06/17/04
SECTION:                    2200      TIME LAST CHANGED:  10:37:02

REQUESTER:                  MSFC
TEST CODE:                  ISSPAL      POICALL
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CLASSIFICATION UNCLASSIFIED

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SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 551180
ITEM NUMBER: H2G

1. DESCRIPTION: ACS S-BAND RETURN DATA FROM WSC TO THE HOSC

The ACS SSAR data shall be transported from the WSC to the MSFC HOSC. During ZOE transit, the Guam Remote Ground Terminal (GRGT) shall provide ISS SSAR data to the HOSC via WSC. Requirements for S-Band return data to the HOSC are as follows:

- a. A 192/12 Kbps synchronous, serial bitstream data and clock service shall be provided for the transfer of real-time S-band downlink telemetry.
- b. A 192/12 Kbps synchronous, serial bitstream data and clock service shall be provided for the transfer of recorded S-band downlink telemetry.
- c. A NISN Mission Critical Service is required.
- d. A HOSC and WSC Mission Critical Systems/SER security level or higher interface is required.
- e. The data transport delay shall not exceed 600 ms from WSC to HOSC.
- f. The maximum bit error rate shall be $10E-6$.
- g. The communication service shall be transparent to the HOSC. (i.e. the data shall be presented by the communications equipment to the HOSC in the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the HOSC and shall require no additional processing or data handling capabilities on the part of the HOSC. The data provided by the WSC shall not be altered by the communications service).
- h. The communications service shall be capable of handling rate changes between 192 Kbps and 12 Kbps.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/03

[PRD] DATABASE RECORD: 554862 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/04/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H3G DATE LAST CHANGED: 05/09/03
SECTION: 2200 TIME LAST CHANGED: 08:03:18

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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SUPPLIER COMMITMENT: WILCO

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SECTION 2700 - COMMUNICATION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      545763      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      04/26/00
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1          DATE LAST CHANGED:  06/18/04
SECTION:                    2700       TIME LAST CHANGED:  10:05:07

REQUESTER:                  MSFC
SUBREQUESTER:               NISN001
TEST CODE:                  INFO
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1. DESCRIPTION: NISN OVERVIEW

The primary responsibility of the NASA Integrated Services Network (NISN) is to interconnect tracking and telemetry stations and sites, launch areas, mission and project/payload operations control centers, science data capture facilities, and network control centers in the communications of data, voice, and video.

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[PRD] DATABASE RECORD:      545773      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      04/26/00
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H2G        DATE LAST CHANGED:  06/18/04
SECTION:                    2700       TIME LAST CHANGED:  09:55:56

REQUESTER:                  MSFC
TEST CODE:                  ISSPAL      POICALL
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1. DESCRIPTION: SECURITY REQUIREMENTS

NISN provided communications services shall comply with NASA Procedures and Guidelines (NPG) 2810.1, NASA's Information Technology (IT) Security Program (latest revision). The users of NISN services shall comply with the Internet Protocol Operational Network (IONet) Access Protection Policy and Requirements document, GSFC document number 290-004.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/02/01

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[PRD] DATABASE RECORD:      551445      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      03/03/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H4H        DATE LAST CHANGED:  06/18/04
SECTION:                    2700       TIME LAST CHANGED:  10:57:29

REQUESTER:                  MSFC
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SECTION 2700 - COMMUNICATION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 551445
ITEM NUMBER: H4H

TEST CODE: JAXAALL

1. DESCRIPTION: HOSC AND JAXA INTERFACE

The JAXA data transfer interface will be located at the JAXA gateway in the MSFC HOSC. Details of the data/voice/video requirements of the interface are documented in the SSP-45025, HOSC and JAXA ICD. JAXA will provide the communications services between the JAXA gateway at MSFC and the JAXA facility.

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/03/03

[PRD] DATABASE RECORD: 551446 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/03/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H5H DATE LAST CHANGED: 06/18/04
SECTION: 2700 TIME LAST CHANGED: 11:03:41

REQUESTER: MSFC
TEST CODE: ESAALL

1. DESCRIPTION: HOSC AND ESA INTERFACE

The ESA Phase II data transfer interface will be located at the ESA gateway in the MSFC HOSC. Details of the data/voice/video requirements of the interface are documented in the SSP-45026, HOSC to ESA ICD. ESA will provide the communications services between the ESA gateway at MSFC and the ESA facility.

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/03/03

[PRD] DATABASE RECORD: 555021 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 02/26/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H6G DATE LAST CHANGED: 03/13/03
SECTION: 2700 TIME LAST CHANGED: 07:31:26

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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SECTION 2700 - COMMUNICATION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 555021
ITEM NUMBER: H6G

REQUESTER: MSFC
TEST CODE: ISSPALL POICALL

1. DESCRIPTION: USER PERFORMANCE DATA MESSAGES

User Performance Data (UPD) messages for all ISS elements shall simultaneously share the same communications interface as the Shuttle messages of the same type. Refer to the 451-ICD-NCCDS/MOC, Annex 10 for detailed interface requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/06/03

[PRD] DATABASE RECORD: 555153 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 02/26/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H7G DATE LAST CHANGED: 03/13/03
SECTION: 2700 TIME LAST CHANGED: 07:32:15

REQUESTER: MSFC
TEST CODE: ISSPALL POICALL

1. DESCRIPTION: HOSC TO DSMC INTERFACE

Communications interfaces between the HOSC and the Data Service Management Center (DSMC) shall be provided. Refer to the 530-ICD-NCCDS-MOC Annex 10 for detailed interface requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/06/03

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PROGRAM NUMBER: 30000

SECTION 2730 - VOICE NETWORK TRANSMISSION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:	545782	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	09/03/03
		INITIAL DATE:	04/26/00
ITEM NUMBER:	HIGHT	DATE LAST CHANGED:	10/28/04
SECTION:	2730	TIME LAST CHANGED:	10:56:52
REQUESTER:	MSFC		
TEST CODE:	ISSPAL	POICALL	

1. DESCRIPTION: ISS VOICE COMMUNICATION REQUIREMENTS

NISN shall provide voice communication services from the MSFC HOSC to NASA Centers and TSC locations. The number of voice loops required are as follows:

Loops	Destination	
-----	-----	
144	JSC	(NCHD)
6	GSFC	(NCHD)
24	ARC TSC	(NCHD)
48	GRC TSC	(NCHD)

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/21/04

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 09/03/03

SUPPLIER: JSC AGENCY: JSC/DB (T - JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/21/04

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:	551424	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	03/13/03
		INITIAL DATE:	04/26/00
ITEM NUMBER:	HT1G	DATE LAST CHANGED:	07/13/04
SECTION:	2734	TIME LAST CHANGED:	12:42:38

REQUESTER: MSFC JSC
TEST CODE: ISSPAL POICALL

1. DESCRIPTION: HOSC TO SSCC DATA TRANSFER INTERFACE

NISN shall provide an Open IONET and a NASA operational WAN communication service between the HOSC and the SSCC. This WAN service, using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite will transport the following data types: operational and simulated commands (payload and core), planning data files, uplink file transfer, and archived ISS systems data requests.

- a. A CIR of 112 Kbps shall be provided for the transfer of operational and simulated commands via a dedicated point-to-point circuit or equivalent dedicated private network.
- b. A CIR of 300 Kbps shall be provided for the transfer of operational and simulated uplink files.
- c. A CIR of 192 Kbps shall be provided for the transfer of planning data files.
- d. A CIR of 1 Kbps shall be provided for the transfer of archive requests.
- e. A CIR of 256 Kbps shall be provided for the transfer of Orbiter Communication Adapter (OCA) data.
- f. A NISN Mission Critical Service (for a through d) is required.
- g. A NISN Premium Service for e. is required.
- h. A SSCC and HOSC Mission Critical Systems/MSN security level interface (for a through d) is required.
- i. The one-way data transport delay (for a through d) shall not exceed 120 ms.
- j. The one-way data transport delay for e. shall not exceed 100 ms.
- k. The maximum acceptable packet loss (for a through d) is .001 percent.
- l. The maximum acceptable packet loss for e. is 1 percent.
- m. Refer to the SSCC to HOSC ICD (SSP 45001) for detailed interface requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

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[PRD] DATABASE RECORD: 551424
ITEM NUMBER: HT1G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/13/04

[PRD] DATABASE RECORD: 545779 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: HT2G DATE LAST CHANGED: 07/13/04
SECTION: 2734 TIME LAST CHANGED: 12:43:09

REQUESTER: MSFC JSC
TEST CODE: ISSPAL POICALL

1. DESCRIPTION: SSCC TO HOSC DATA TRANSFER INTERFACE

NISN shall provide an Open IONET and a NASA Operational Wide WAN communications service between the SSCC and the HOSC. This WAN service utilizing the TCP/IP suite will transport the following data types: command responses, command history data files, planning data files, uplink file transfers, and archived ISS Systems data files.

- a. A CIR of 112 kbps shall be provided for the transfer of operational and simulated command responses via a dedicated point-to-point circuit or equivalent dedicated private network.
- b. A CIR of 112 Kbps shall be provided for the transfer of operational and simulated command history files.
- c. A CIR of 192 Kbps shall be provided for the transfer of planning data files.
- d. A CIR of 150 Kbps shall be provided for the transfer of archived ISS Systems data files.
- e. A 192 Kbps, synchronous, serial bitstream data and clock service shall be provided for the transfer of simulated S-band downlink telemetry.
- f. A CIR of 4 Kbps shall be provided for the transfer of real-time and simulated IAM Antenna Management data.
- g. A CIR of 256 Kbps shall be provided for the transfer of Orbiter Communications Adapter (OCA) data.
- h. A NISN Mission Critical Service (for a through f) is required.
- i. A NISN Premium Service for g. is required.
- j. SSCC and HOSC Mission Critical System/MSN security level interface is required.

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[PRD] DATABASE RECORD: 545779
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- k. The one-way data transport delay (a through f) shall not exceed 120 ms.
- l. The one-way data transport delay for g. shall not exceed 100 ms.
- m. The maximum acceptable packet loss (for a through f) is .001 percent.
- n. The maximum acceptable packet loss for g. is 1 percent.
- o. Refer to SSCC to HOSC ICD (SSP 45001) for detailed interface requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/13/04

[PRD] DATABASE RECORD: 545780 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: HT3G DATE LAST CHANGED: 03/19/03
SECTION: 2734 TIME LAST CHANGED: 10:24:13

REQUESTER: MSFC JSC
TEST CODE: ISSPAL POICALL

1. DESCRIPTION: SSTF TO HOSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational Wide Area Network (WAN) communications service for communications between the SSTF and the HOSC.

The WAN service, utilizing TCP/IP protocol suite, will transport the following data types: simulated payload health and status data and Instructor Station (IS) training session data stream.

- a. A CIR of 256 Kbps shall be provided for the transfer of simulated Payload Health and Status data.
- b. A CIR of 1.1 Mbps shall be provided for the transfer of IS Training Session Data.
- c. A CIR of 100 Kbps shall be provided for the transfer of simulated S-band telemetry data.
- d. A NISN Mission Critical service is required.
- e. A SSTF and HOSC Mission Critical Systems/SER security level interface is required.

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[PRD] DATABASE RECORD: 545780
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- f. The one-way data transport delay shall not exceed 100 ms.
- g. The maximum acceptable packet loss is .001 percent.
- h. Refer to the SSTF to MSFC POIC and RAPS ICD (SSP 50088) for detailed interface requirements.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

[PRD] DATABASE RECORD: 555027 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: HT4G DATE LAST CHANGED: 05/09/03
SECTION: 2734 TIME LAST CHANGED: 08:27:21

REQUESTER: MSFC JSC
TEST CODE: ISSPAL POICALL

1. DESCRIPTION: HOSC TO SSTF DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the SSTF and the HOSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Simulated Payload Health and Status and Instructor Station (IS) Training Session data.

- a. A CIR of 1.4 Mbps shall be provided for the transfer of Remote Area for Payload Support (RAPS) data and Instructor Operator Station (IOS) Instructor Station (IS) Training Session Data.
- b. A CIR of 100 Kbps shall be provided for the transfer of S-band command data.
- c. A NISN Mission Critical Service is required.
- d. A SSTF and HOSC Mission Critical Systems/SER security level interface is required
- e. The one-way data transport delay shall not exceed 100 ms.
- f. The maximum acceptable packet loss is .001 percent.
- g. Refer to SSTF to MSFC POIC and RAPS ICD (SSP 50088) for detailed interface requirements.

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[PRD] DATABASE RECORD: 555027
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SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

[PRD] DATABASE RECORD: 545790 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H7G DATE LAST CHANGED: 07/20/04
SECTION: 2734 TIME LAST CHANGED: 13:21:20

REQUESTER: MSFC
SUBREQUESTER: JSCT
TEST CODE: JSCTALL

1. DESCRIPTION: HOSC TO JSC TSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the HOSC and the JSC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-Time data, COR Dump of Real-Time data, LOR PB of Real-Time Data, COR Dump of real-time data, LOR PB of COR Dump, PIMS Data, PPS Data, GSE Packet definition and distribution, OCMS Data, Telemetry Services, and Commanding Services.

The X-Windows interface requires a CIR of 56 Kbps for each active session (screen which is continually updating). The X-Windows interface require a CIR of 56 Kbps for the combined non-active sessions.

- a. A CIR of 7.544 Mbps shall be provided for the transfer of real-time payload experiment data, stored payload experiment data, payload health and status data, flight ancillary data, downlink file transfers, GSE subsets, and custom data packets.
- b. A NISN Premium service is required.
- c. A HOSC and JSC Mission Critical Systems/SER security level interface is required.
- d. The one-way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packet loss is <1%.

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[PRD] DATABASE RECORD: 545790
ITEM NUMBER: H7G

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

[PRD] DATABASE RECORD: 555061 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H8G DATE LAST CHANGED: 03/19/03
SECTION: 2734 TIME LAST CHANGED: 10:26:04

REQUESTER: MSFC
TEST CODE: JSCTALL

1. DESCRIPTION: JSC TSC TO HOSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the HOSC and the JSC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-Time data, COR Dump of Real-Time data, LOR PB of Real-Time Data, COR Dump of real-time data, LOR PB of COR Dump, PIMS Data, PPS Data, GSE Packet definition and distribution, OCMS Data, Telemetry Services, and Commanding Services.

The X-Windows interface requires a CIR of 56 Kbps for each active session (screen which is continually updating). The X-Windows interface requires a CIR of 56 Kbps for the combined non-active sessions

.

- a. A CIR of 1.544 Mbps shall be provided for the transfer of X-Window commands, PIMS data, PPS data, and uplink file transfers.
- b. A NISN Premium service is required.
- c. A HOSC and JSC TSC Mission Critical Systems/SER security level interface is required.
- d. The one-way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packet loss is <1%.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

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[PRD] DATABASE RECORD: 555061
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[PRD] DATABASE RECORD: 554957 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H9G DATE LAST CHANGED: 03/19/03
SECTION: 2734 TIME LAST CHANGED: 10:26:30

REQUESTER: MSFC
TEST CODE: GRCTALL

1. DESCRIPTION: HOSC TO GRC TSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational Wide Area Network (WAN) communications service for communications between the HOSC and the GRC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-Time data, COR Dump of Real-Time data, LOR PB of Real-Time Data, LOR PB of COR Dump, PIMS Data, PPS Data, GSE Packet definition and distribution, OCMS Data, Telemetry Services, and Commanding Services.

- a. A CIR of 7.278 Mbps shall be provided for the transfer of real-time payload experiment data, stored payload experiment data, payload health and status data, flight ancillary data, ground ancillary data, GSE subsets, and custom data packets.
- b. A NISN Premium service is required.
- c. A HOSC and GRC TSC Mission Critical Systems/SER security level interface is required.
- d. The one-way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packet loss is <1%.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

[PRD] DATABASE RECORD: 555047 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H10G DATE LAST CHANGED: 03/19/03
SECTION: 2734 TIME LAST CHANGED: 10:27:00

REQUESTER: MSFC

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[PRD] DATABASE RECORD: 555047
ITEM NUMBER: H10G

TEST CODE: GRCTALL

1. DESCRIPTION: GRC TSC TO HOSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational Wide Area Network (WAN) communications service for communications between the HOSC and the GRC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-Time data, COR Dump of Real-Time data, LOR PB of Real-Time Data, LOR PB of COR Dump, PIMS Data, PPS Data, GSE Packet definition and distribution, OCMS Data, Telemetry Services, and Commanding Services.

- a. A CIR of 1.544 Mbps shall be provided for the transfer of X-Window commands, PIMS data, PPS data, and uplink file transfer.
- b. A NISN Premium service is required.
- c. A HOSC and GRC TSC Mission Critical Systems/SER security level interface is required.
- d. The one-way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packet loss is <1 percent.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03

[PRD] DATABASE RECORD: 554960 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 02/18/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H11G DATE LAST CHANGED: 03/13/03
SECTION: 2734 TIME LAST CHANGED: 07:41:49

REQUESTER: MSFC
TEST CODE: RSAALL

1. DESCRIPTION: HOSC AND MCC-M MISSION DATA TRANSFER INTERFACE

NISN will provide a full duplex NASA operational PIP Wide Area Network (WAN) communications service for communications from the HOSC to the Russian Space Agency (RSA). This PIP WAN service using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of protocols will provide the exchange of Mission Planning Data Files and will also be

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[PRD] DATABASE RECORD: 554960
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used for the Payload Information Management System (PIMS) interface.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/03
RESPONSE:

[PRD] DATABASE RECORD: 554947 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/13/03
INITIAL DATE: 04/26/00
ITEM NUMBER: H13G DATE LAST CHANGED: 05/09/03
SECTION: 2734 TIME LAST CHANGED: 08:30:06

REQUESTER: MSFC
TEST CODE: RPIALL

1. DESCRIPTION: HOSC TO RPI DATA TRANSFER INTERFACE

DATA: NISN shall provide a 10 MBPS Standard IP routed data interface between the HOSC and each designated RPI Peering Point for the purpose of transporting telemetry data and providing an Internet interface to POIC Web services, PPS, VoIP, and programmatic interfaces.

- a. Mean Time to Restore (MTTR) between the NISN-provided HOSC Demarcation and a Peering Point shall not exceed 24 hours.
- b. The one-way transport delay between the NISN-provided HOSC Demarcation and a Peering Point shall not exceed 250 ms.
- c. The maximum acceptable packet loss between the NISN-provided HOSC Demarcation and a Peering Point is 1%.
- d. The coverage period for a Standard IP routed data service as identified in the NISN Services Document is acceptable.
- e. NISN responsibility for performance is terminated at the Peering Point(s).
- f. NISN will provide assistance in isolating outages between the Peering Point and the RPI Site, if requested.

NOTE: It is the responsibility of each RPI to make the arrangements for the transfer of data from the Peering Point to their RPI location. Performance standards, restoration times, and other

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[PRD] DATABASE RECORD: 554947
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Service Level Agreement (SLA) type items shall be made solely
between the RPI and their Internet Service Provider (ISP).
There shall be no NISN involvement in this process.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/19/03
RESPONSE:

[PRD] DATABASE RECORD: 554946 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 04/26/00
INITIAL DATE: 04/26/00
ITEM NUMBER: H14 DATE LAST CHANGED: 05/09/03
SECTION: 2734 TIME LAST CHANGED: 08:34:44

REQUESTER: MSFC
TEST CODE: INFO

1. DESCRIPTION: RPI DATA TRANSFER INTERFACE FROM THE PEERING POINT
TO THE RPI SITE

It is the responsibility of each RPI to make the arrangements for the
transfer of data from the Peering Point to their RPI location.
Performance standards, restoration times, and other Service Level
Agreement (SLA) type items shall be made solely between the RPI and
their Internet Service Provider (ISP). There will be no NISN
involvement in this process.

[PRD] DATABASE RECORD: 581857 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 04/18/05
INITIAL DATE: 04/18/05
ITEM NUMBER: H15G DATE LAST CHANGED: 04/26/05
SECTION: 2734 TIME LAST CHANGED: 14:44:36

REQUESTER: MSFC
TEST CODE: RPIALL

1. DESCRIPTION: JSC ISIL TO MSFC HOSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for

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[PRD] DATABASE RECORD: 581857
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data transfer from the JSC ISS Systems Integration Lab (ISIL) to the MSFC HOSC. This WAN service will provide for the transport of VCDU packet formatted data from the HFRM system and for Ethernet UDP Packet formatted data from the Payload MDM System.

- A. A CIR of 50 Mbps shall be provided
- B. A Mission Critical Systems/SER security level interface is required.
- C. This WAN service shall have an availability of not less than 99.5%.
- D. The restoral time shall not exceed 24 hours.
- E. The maximum packet loss shall not exceed 1%.
- F. The one way data transport delay shall not exceed 250 ms.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)
RESPONDER: TONY WILLIAMS

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/26/05

[PRD] DATABASE RECORD: 558990 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 05/09/01
INITIAL DATE: 05/09/01
ITEM NUMBER: H28T DATE LAST CHANGED: 05/09/03
SECTION: 2734 TIME LAST CHANGED: 08:40:04

REQUESTER: MSFC
TEST CODE: INC2 INC3 INC4 INC5
INC6 INC7

1. DESCRIPTION: EarthKAM Electronic Still Camera (ESC) Digital Image Data Distribution

- a. JSC shall provide distribution of the Ku-Band downlinked data files containing ESC Digital Image Data to the EarthKAM users at the JSC TSC and at the University of California/San Diego (UCSD).
- b. JSC shall provide the EarthKAM users at the JSC TSC with access to the OCA Operators (EDLS Server) and the EarthKAM Server (JSC/DO5 Server).
- c. JSC shall provide the EarthKAM users at UCSD with the ESC

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[PRD] DATABASE RECORD: 558990
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Digital Image Data in serial format.

- d. Voice and data distribution to the EarthKAM users at UCSD is required only during active EarthKAM operations periods.
- e. Voice requirements for the EarthKAM users have been identified in DBR 558936 (Section 2750) of this document.

SUPPLIER: JSC AGENCY: JSC/DB (T - JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 09/27/02

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SECTION 2750 - VOICE TERMINATIONS

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[PRD] DATABASE RECORD:	554952	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	12/20/05
		INITIAL DATE:	04/26/00
ITEM NUMBER:	HT1GHT	DATE LAST CHANGED:	05/26/06
SECTION:	2750	TIME LAST CHANGED:	10:39:40

REQUESTER:	MSFC	JSC
TEST CODE:	FULL-TIME	ISSPAL POICALL

1. DESCRIPTION: VOICE COMMUNICATION DETAILS TO JSC & GSFC

I. JSC-to-MSFC REAL-TIME SUPPORT		COMMENTS & RESTRICTIONS
1 S/G 1	T/M	RPI Talk access controlled by PAYCOM
1 S/G 2	T/M	RPI Talk access controlled by PAYCOM
ASMBLY COORD 1	T/M	
CAPCOM COORD 1	T/M	MSFC PAYCOM, POD, & OC ONLY
CATO 1	T/M	
CBOSS CONF	T/M	JSC TSC CBOSS IVoDS Users (Note 3)
EPO COORD 1	T/M	
ETOV COORD	T/M	
FCR SYS 1	T/M	
FD/POD COORD 1	T/M	JSC ISS FD & MSFC POD ONLY
FMT COORD 1	T/M	
HLS CONF 1	T/M	JSC TSC Only (Note 3)
HLS PLAN 1	T/M	JSC TSC Only (Note 3)
HOSC O/W	T/M	IST Use Only
HOUSTON SUPT	T/M	
IEPC 1	T/M	
IP CONF	T/M	
IP/GC 1	T/M	
IP STOWAGE 1	T/M	
ISS AFD 1	T/M	Talk for POD & OC Only
ISS CAPCOM 1	T/M	MSFC PAYCOM, POD, & OC ONLY
ISS COMMAND 1	T/M	
ISS FD 1	T/M	Talk for POD Only
ISS MCC COORD 1	T/M	IST Use Only
ISS MED OPS 1	T/M	MSFC DMC Only
ISS MER 1	T/M	
ISS MER 2	T/M	
ISS MER PROB 1	T/M	
ISS OPS	T/M	
ISS PRIME OPS 1	T/M	
ISS SYS COORD 4	T/M	

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[PRD] DATABASE RECORD: 554952
ITEM NUMBER: HT1GHT

N-USOC OPS	T/M	
OCA BLUE FCR	M	
OCA ISS 1	T/M	
ODIN 1	T/M	
OPS PLAN 1	T/M	
OSO COORD 1	T/M	
PHALCON COORD 1	T/M	
PLAN/STOW COORD	T/M	
RS ISS VHF 1	M	Note 6
RS ISS VHF 2	M	
S/T PLAN COORD 1	T/M	
SVF COORD 1	T/M	IST Use Only
TCS COORD 1	T/M	
TRANSL RUS TO ENG	M	
UCSD-MCG	T/M	

II. JSC-to-MSFC

SIMULATION & TEST SUPPORT

COMMENTS & RESTRICTIONS

2 S/G 1	T/M	RPI Talk access controlled by PAYCOM
2 S/G 2	T/M	RPI Talk access controlled by PAYCOM
AFD CONF (SIM)	T/M	Configured only for Joint STS/ISS Sim debriefs between JSC and MSFC
ASMBLY COORD 2	T/M	
CAPCOM COORD 2	T/M	MSFC PAYCOM, POD, & OC ONLY
CATO 2	T/M	
EPO COORD 2	T/M	
FCR SYS 2	T/M	
FD/POD COORD 2	T/M	Restricted to MSFC POD console
FMT COORD 2	T/M	
IEPC 2	T/M	
IP/GC 2	T/M	
IP/GC TEST	T/M	
IP STOWAGE 2	T/M	
ISS AFD 2	T/M	Talk for POD, OC & Sim Sup Only
ISS CAPCOM 2	T/M	MSFC PAYCOM, POD, & OC ONLY
ISS COMMAND 2	T/M	
ISS FD 2	T/M	
ISS IST TEST	T/M	
ISS MCC COORD 2	T/M	IST Use Only

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[PRD] DATABASE RECORD: 554952
ITEM NUMBER: HT1GHT

ISS PRIME OPS 2	T/M	
ISS SIM DATA	T/M	POIC Sim Team Only
ISS TN COORD 2	M	
ISS TRNING COORD	T/M	POIC Sim Team Only
OCA ISS 2	T/M	
OCA RED FCR	M	
ODIN 2	T/M	
OPS PLAN 2	T/M	
ORT COORD	T/M	
OSO COORD 2	T/M	
PHALCON COORD 2	T/M	
SIM ISS SYS COORD 4	T/M	
SIM HOUSTON SUPT	T/M	
SIM ISS OPS	T/M	
SIM P/L 1	T/M	POIC Sim Team Only
SIM P/L 2	T/M	POIC Sim Team Only
SIM RS ISS VHF 1	M	
SIM RS ISS VHF 2	M	
STL 2	T/M	POIC Sim Team Only
SVT COORD 1	T/M	SVT TESTING WITH COL-CC
SVT COORD 2	T/M	SVT TESTING WITH COL-CC
SVT COORD 3	T/M	SVT TESTING WITH COL-CC
TCS COORD 2	T/M	
TSC SIM FD	T/M	Connects to ISS FD 2 at MSFC, On an As-Required basis.
TSC SIM S/G-1	T/M	Connects to 2 S/G 2 at MSFC, On an As-Required basis.

III. MSFC-to-JSC
REAL-TIME SUPPORT

		SUPPORT COMMENTS & RESTRICTIONS
1 SCI 1	T/M	JSC TSC or CSA Only
1 SCI 2	T/M	JSC TSC or CSA Only
1 SCI 3	T/M	JSC TSC or CSA Only
1 SCI 4	T/M	JSC TSC or CSA Only (Note 3)
1 SCI 5	T/M	JSC TSC or CSA Only
DMC 1	T/M	JSC TSC Only
IP PLAN 1	T/M	Distribution to ESA only
Ku COORD 1	T/M	JSC SSCC (T/M) & JSC TSC (M)
LIS COORD 1	T/M	SSCC and JSC TSC

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
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SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD: 554952
ITEM NUMBER: HT1GHT

MSG COORD	T/M	ESA COL-CC Only
OC 1	T/M	JSC TSC Only
PAYCAP 1	T/M	SSCC Only. POIC PAYCOM, JSC CAPCOM, & JSC Comm Tech Talk Only
PLAN COORD 1	T/M	SSCC Only
POD 1	T/M	SSCC and JSC TSC
POIC STOWAGE 1	T/M	JSC TSC Only
PRO 1	T/M	JSC TSC Only
PSE 1	T/M	JSC TSC Only
RPI OPS 1	T/M	JSC TSC or CSA Only
SAMS COORD	T/M	JSC TSC Only (Note 3)
SOC 1	T/M	JSC TSC Only
TV OPS 1	T/M	SSCC and JSC TSC

IV. MSFC-to-JSC

SIMULATION & TEST SUPPORT

COMMENTS & RESTRICTIONS

2 SCI 1	T/M	JSC TSC or CSA Only
2 SCI 2	T/M	JSC TSC or CSA Only
2 SCI 3	T/M	JSC TSC or CSA Only
2 SCI 4	T/M	JSC TSC or CSA Only (Note 3)
2 SCI 5	T/M	JSC TSC or CSA Only
DMC 2	T/M	JSC TSC Only
IP PLAN 2	T/M	Distribution to ESA only
IP SIM	T/M	Distribution to ESA only
JSC SIM	T/M	JSC TSC & POIC Sim Teams Only
Ku COORD 2	T/M	JSC SSCC (T/M) & JSC TSC (M)
LIS COORD 2	T/M	SSCC and JSC TSC
OC 2	T/M	JSC TSC Only
PAYCAP 2	T/M	SSCC Only. POIC PAYCOM, JSC CAPCOM & JSC Comm Tech Talk Only
PAYCOM 2	T/M	LIS REP at JSC TSC Only
PLAN COORD 2	T/M	SSCC Only
POD 2	T/M	SSCC and JSC TSC
POIC STOWAGE 2	T/M	JSC TSC Only
PRO 2	T/M	JSC TSC Only
RPI OPS 2	T/M	JSC TSC or CSA Only
SOC 2	T/M	JSC TSC Only
TSC SIM 2	T/M	POIC & JSC TSC Sim Teams Only

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[PRD] DATABASE RECORD: 554952
ITEM NUMBER: HT1GHT

TV OPS 2 T/M SSCC and JSC TSC Only

V. JSC-to-MSFC (STS Support to ISS Payloads) (Notes 4 & 5)

A/G 1	M	
A/G 2	M	
AFD CONF	T/M	Talk for POD, SOC, & OC Only
FD	T/M	Talk for POD & OC Only
MCC COORD	T/M	IST Use Only
POCC CMD	T/M	
PRIME OPS	T/M	

VI. JSC-to-MSFC (PAO LOOPS)

COMMENTATOR OPS	T/M	PAO Use Only
ISS SUPPORT AUDIO	T/M	PAO Use Only
MISSION AUDIO	M	PAO Use Only
PAO COORD	T/M	PAO Use Only
PAO CUE	T/M	PAO Use Only
VIDEO OPS	T/M	PAO Use Only

VII. GSFC-to-MSFC

REAL-TIME SUPPORT		COMMENTS & RESTRICTIONS
GM COORD	T/M	IST Only
NISN COMM COORD	T/M	IST Only
ISS SITE COORD	T/M	IST Only during US VHF supports.
ISS TN COORD 1	M	
TV CONFERENCE	T/M	
WSC PLAYBACK COORD	T/M	IST Only

DBR NOTES:

1. JSC is responsible to provide responses to Section I - VI only.
2. GSFC is responsible to provide responses to Section VII only.
3. This loop has been requested by the JSC TSC
4. Required only when Shuttle is supporting ISS Payloads
5. Default configuration is Real-Time.
6. The default configuration for RS ISS VHF 1 is Monitor only.
Only at the direction of the ISS FD will it be changed to Talk/
Monitor. This should be only during VHF proficiency passes or
for VHF voice contingency supports.

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SECTION 2750 - VOICE TERMINATIONS

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[PRD] DATABASE RECORD: 554952
ITEM NUMBER: HT1GHT

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)
RESPONDER: TONY WILLIAMS

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 12/20/05

SUPPLIER: MSFC AGENCY: MSFC/EO60 (MARSHALL SPACE FLIGHT CENTER)
RESPONDER: MIKE BLUM

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 12/20/05

SUPPLIER: JSC AGENCY: JSC/DB (T - JOHNSON SPACE CENTER)
RESPONDER: PAT MATTINGLY

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 05/26/06

[PRD] DATABASE RECORD: 558936 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: ISS II APPROVAL DATE: 03/04/03
INITIAL DATE: 04/09/01
ITEM NUMBER: H2HT DATE LAST CHANGED: 05/29/03
SECTION: 2750 TIME LAST CHANGED: 12:48:05

REQUESTER: MSFC
TEST CODE: INC2 INC3 INC4 INC5
INC6 INC7

1. DESCRIPTION: EarthKAM Payload Operations Voice Requirements

The following is a list of approved loops required by the JSC TSC and the University of California/San Diego (UCSD) for conducting EarthKAM Payload Operations activities.

JSC MCC-H will make distribution of the following loops to JSC TSC Console Position 2383:

1 S/G 1 M
1 S/G 2 M
1 SCI 1 T/M
ISS FD 1 M
LIS COORD 1 T/M

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INTERNATIONAL SPACE STATION ORBITAL VOL-II
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SECTION 2750 - VOICE TERMINATIONS

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[PRD] DATABASE RECORD: 558936
ITEM NUMBER: H2HT

OC 1	T/M
OCA ISS 1	M
OPS PLAN 1	M
POD 1	T/M
UCSD-MCG	T/M

MSFC HOSC will make distribution of the following loops to UCSD:

1 S/G 1	M
1 S/G 2	M
1 SCI 1	M
OCA ISS 1	M
ISS FD 1	M
LIS COORD 1	M
POD 1	M
UCSD-MCG	T/M

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/04/03

SUPPLIER: JSC AGENCY: JSC/DB (T - JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/05/03

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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PROGRAM NUMBER: 30000

SECTION 2780 - OTHER COMMUNICATIONS

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      551448      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      03/03/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1          DATE LAST CHANGED:  03/03/03
SECTION:                    2780       TIME LAST CHANGED:  15:05:29

REQUESTER:                  MSFC
TEST CODE:                  INFO
=====
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1. DESCRIPTION: TELEVISION COMMUNICATIONS REQUIREMENTS

The ISS operational television is multiplexed into the Ku-Band aggregate return link and is transmitted to the SSCC as digital data. Up to four channels may be simultaneously transmitted. The SSCC will convert the digital data to National Television Standards Committee (NTSC) signals and corresponding analog voice. JSC will make these television and voice signals available at the JSC-located NASA Operational WAN I/F for distribution.

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-II
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2800 - VIDEO

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:      545778      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                ISS II      APPROVAL DATE:      10/03/03
                                     INITIAL DATE:      04/26/00
ITEM NUMBER:                H1GT      DATE LAST CHANGED:  05/24/06
SECTION:                    2800      TIME LAST CHANGED:  13:43:59

REQUESTER:                  MSFC
TEST CODE:                  ISSPALL      POICALL
```

1. DESCRIPTION: TELEVISION DISTRIBUTION REQUIREMENTS

NISN is to provide two (2) video channels to the HOSC, GRC TSC, ARC TSC, and to the RPI Peering Point. NISN is to encode NTSC video sourced from JSC Bldg 8, up to 6 Mbps per channel.

JSC ISD is responsible for delivery of NTSC video from JSC Bldg 8 to the JSC NISN PIP demarcation point. Service restoration for ISD resources is <8 hours on weekdays, and on-call on weekends.

A NISN PIP service is required to the HOSC/MSFC TSC, the GRC TSC, and the ARC TSC. NISN will provide decoding equipment at the MSFC Bldg. 4207 and at the GRC TSC and ARC TSC to deliver NTSC video outputs.

A NISN SIP service is required to the RPI Peering Point.

The RPI sites require the video to be delivered in IP format for viewing on a PC. RPI's are responsible for the transfer of encoded video from the Peering Point to their RPI locations and are responsible for the decoding and display of the received video data delivered in IP format.

The following table identifies current and future video service requirements, and will be updated as locations are changed.

Description	Number of Channels
-----	-----
MSFC HOSC	2
MSFC TSC	2
GRC TSC	2
ARC TSC	2
Univ. of Alabama/Birmingham	1
Univ. of Colorado/Boulder	1
Univ. of Cal./San Diego	1

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SECTION 2800 - VIDEO

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[PRD] DATABASE RECORD: 545778
ITEM NUMBER: H1GT

REF: ISS VOL-I SECTION 2800 ITEM TG2GHT DBR 553803

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 05/15/06

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 05/24/06

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INTERNATIONAL SPACE STATION ORBITAL VOL-II
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PROGRAM NUMBER: 30000

SECTION 3073 - REAL TIME DATA DISTRIBUTION

PUBLICATION DATE: 01/04/99 REVISION: 0000 RUN DATE: 09/11/06

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[PRD] DATABASE RECORD:	589157	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	ISS II	APPROVAL DATE:	09/07/06
		INITIAL DATE:	09/07/06
ITEM NUMBER:	H14H	DATE LAST CHANGED:	09/07/06
SECTION:	3073	TIME LAST CHANGED:	10:58:09
REQUESTER:	MSFC		
TEST CODE:	INC14		

1. DESCRIPTION: MSFC PROVIDED POIC SERVICES

USER	OPERATING LOCATION	POIC SERVICES
----	-----	-----
HRF	JSC TSC	1-6
CBOSS-BCSS	JSC TSC	1-5,7
MELFI	JSC TSC	1-7
EarthKAM	JSC TSC	1,4,7
EarthKAM	UCSD	1,7
EarthKAM	JPL	1
EMCH	MCC-H/DoD POCC	1,4,5,7
MISSE 3/4	MCC-H/DoD POCC	4
SPHERES	MCC-H/DoD POCC	1,4,5,7
EPO	JSC/Bldg 5	1,4,7
LOCAD PTS	MSFC TSC	1,4,5,7
MSG	MSFC TSC	1-7
SAMS II	GRC TSC	1-7
CFE	GRC TSC	1,4-7
BCAT-3	GRC TSC	1,3,4,7
DAFT 3/4	GRC TSC	1,4,7
InSPACE	GRC TSC	1-4,6,7
SEM	GSFC	1,4,6,7
CGBA 2/4	U of Colorado	1-7
CSI-1	U of Colorado	1,4,6,7
POEMS	KSC/SLSF	1,3,4,6,7
ALTEA	U of Rome	1,3-7
ALTEA	MARS/Naples, Italy	1,3-7
PMDIS/TRAC	PTOC/CSA	1,4,6,7
PMDIS/TRAC	German Sports Univ, Cologne	1,7
EMCS/GRAVI-1	N-USOC/Norway	1-7
EMCS Facility	N-USOC/Norway	1-7

NOTE:
1=Voice

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INTERNATIONAL SPACE STATION ORBITAL VOL-II
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SECTION 3073 - REAL TIME DATA DISTRIBUTION

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[PRD] DATABASE RECORD: 589157
ITEM NUMBER: H14H

2=Commanding
3=Telemetry
4=PIMS
5=Video
6=OSTPV/iPV
7=S/G Keying

SUPPLIER: MSFC AGENCY: MSFC/EO60 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 09/07/06

THIS REPORT CONTAINS 55 PAGES

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